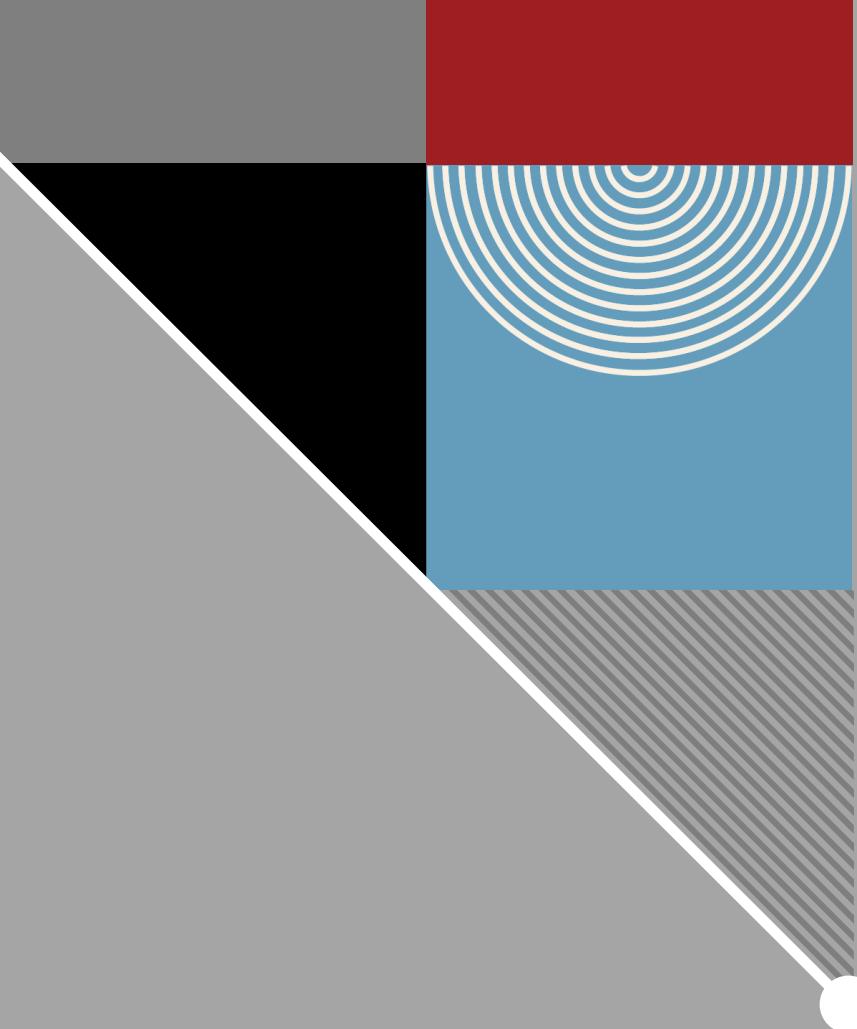




# SYSTEMATIC REVIEWS AND META-ANALYSES

**Shelley Facente, PhD, MPH**  
**Sara Durán, MPH**

**In-Person Session 4 of 5**



# COURSE WEBSITE

- Slides and all other resources you'll need for the course are available at:

**<https://facenteconsulting.com/srmacourse/>**

# CURRICULUM

## Monday

Sensitivity analyses & stratified analyses

Understanding SRMA limitations

Interpreting and reporting results

## Tuesday

Review and practice defining the review question and PICOS criteria to be used

Work time

## Wednesday

Tips and Tricks with Covidence

Work time

## Thursday

Deeper dive into evaluating bias

Publishing your review

Work time

## Friday

Reviewing special types of SRs and MAs

Final chance for Q&A from the course

## Virtual in October

Overview of SRs and MAs

Searching for records and studies

PROSPERO and PRISMA

Extracting and organizing data

Defining the review question

Summarizing data and meta-analysis

Evaluating Bias

# HOW TO ACCESS FULL TEXT

Sometimes it can be very difficult to access articles behind a paywall. Options?

1. Look on Google Scholar, ResearchGate.net, and Academia.edu
2. Check <https://osf.io>
3. Try this tool: <https://libguides.umflint.edu/openaccess>
4. Try a request site, like subreddit r/scholar
5. Contact the author(s) and ask for a copy
6. See if there is a pre-print of the article (but note if this is what you use)

# HOW TO ACCESS FULL TEXT

Dr Lisa Nivison-Smith  
@LNivisonSmith

## 1. @SciHubUpdated

Online library created from downloading papers through institute logins to SciHub's own server.

✓ Pros

- Claims to have 99% all papers

✗ Cons

- questionable legality
- blocked in some countries
- no papers added since 2021

2:26 PM · Oct 5, 2022

Dr Lisa Nivison-Smith  
@LNivisonSmith

## 2. @unpaywall

A browser extension which finds paper PDFs legally by searching various online repositories

✓ Pros

- Legal
- Extension automatically searches for paper in your browser

✗ Cons

- Only on Firefox and chrome desktop browsers

2:26 PM · Oct 5, 2022

Dr Lisa Nivison-Smith  
@LNivisonSmith

## 3. Open Access Button

Similar to Unpaywall but if it cannot find a PDF, the tool offers to email the authors to ask for the paper

✓ Pros

- Legal
- More chance to find paper by asking authors

✗ Cons

- Need to press button everytime to search for a paper

2:26 PM · Oct 5, 2022



Dr Lisa Nivison-Smith @LNivisonSmith · Oct 5, 2022

## 4. @PaperPandaHQ

A Chrome extension that finds the DOI of the paper from the current webpage, then searches for it from various repositories

✓ Pros

- Can set search to include your institution's library

✗ Cons

- Not clear if all databases searched are legal



2



23



301



Dr Lisa Nivison-Smith @LNivisonSmith · Oct 5, 2022

## 5. 12ftladder

Finds the cached, unpaywalled version of a site seen by Google search

✓ Pros

- No extension needed, just add [12ft.io](https://12ft.io) before URL of a paywalled page

✗ Cons

- Mostly for news sites
- Has been disabled for some sites

\*Please note this is not a recommendation or endorsement to use any of these sites

# Evaluating Risk of Bias



Bias is a “systematic error or deviation from the truth” and can stem from a variety of issues, including reporting bias, evidence selection bias, or publication bias.



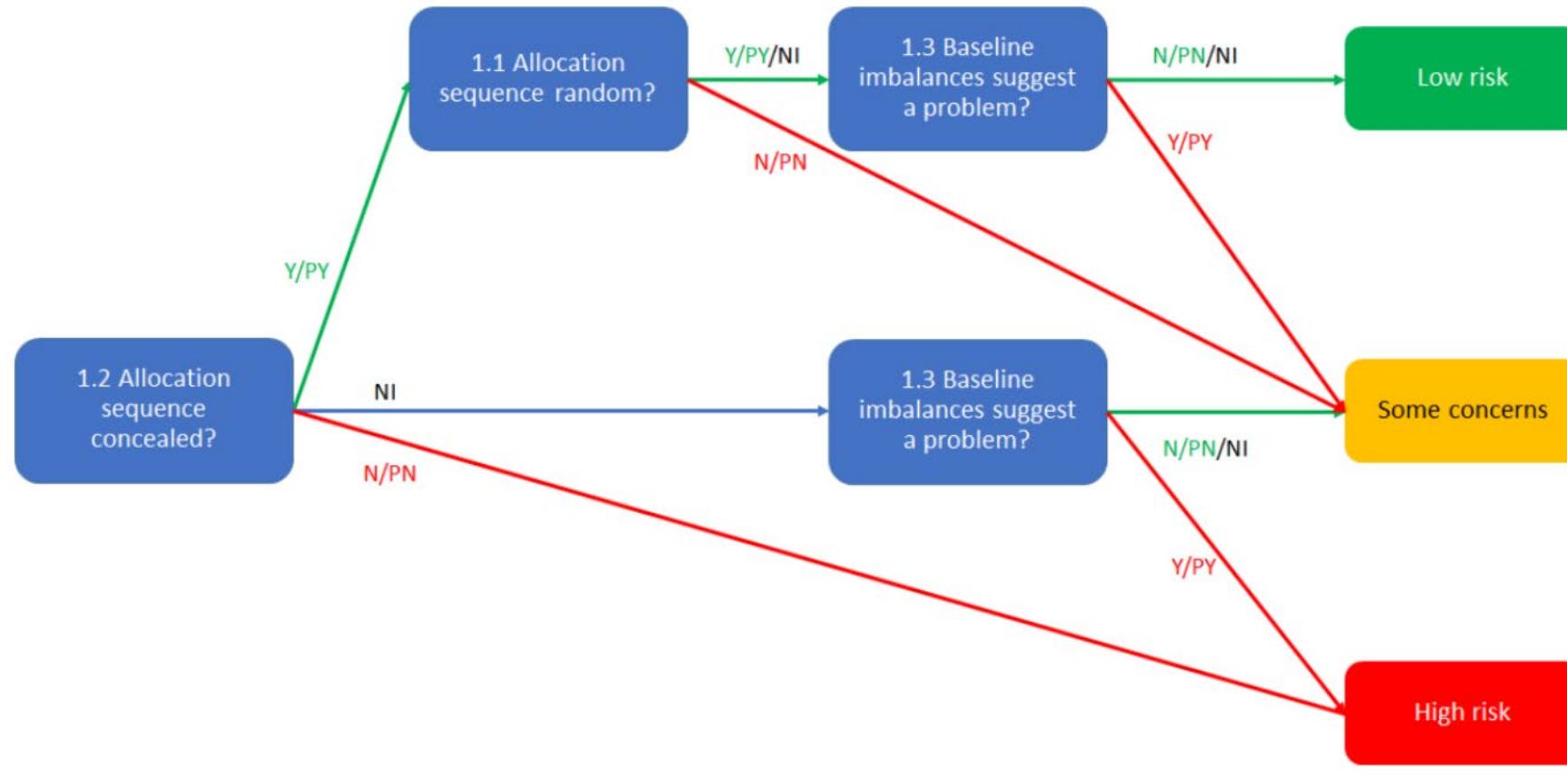
Within systematic review, bias can be introduced from individual studies or the portfolio of studies included



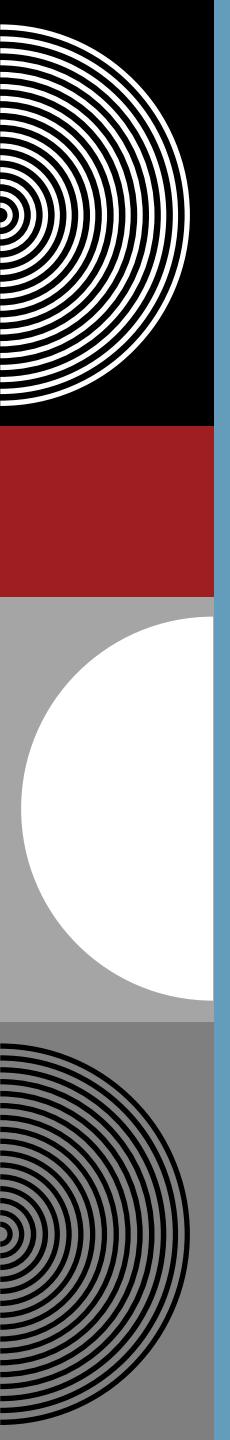
Bias is not always an indicator of poor study quality, in fact bias can be introduced in well-conducted studies.

# EVALUATING RISK OF BIAS

**Figure 1. Algorithm for suggested judgement of risk of bias arising from the randomization process.**



1. Low risk
2. Some concerns
3. High risk



# OTHER BIAS EVAL OPTIONS

- RoB 2 (Risk of Bias – randomized trials)
- ROBINS-I (Risk Of Bias In Non-randomized Studies of Interventions)

# Risk of bias assessment

Responses underlined in green are potential markers for low risk of bias, and responses in **red** are potential markers for a risk of bias. Where questions relate only to sign posts to other questions, no formatting is used.

## 1. Bias due to confounding

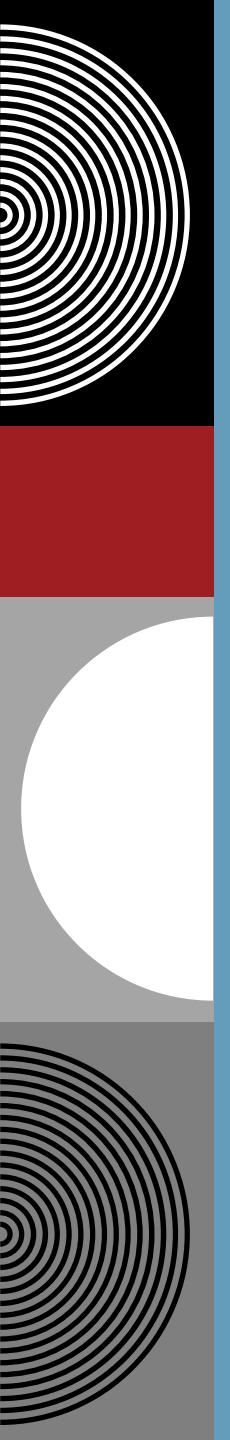
### Guidance notes

The questions in this domain focus on the confounding factors that were identified as important in the preliminary evaluation in section E.

We use the term uncontrolled confounding to refer to confounding that was not controlled by the design or analysis of the study – and is therefore likely to bias the estimated effect of intervention. This may arise because (i) confounding factors were not (or could not) be measured; (ii) variables used to measure confounding factors were insufficient to characterize the confounding factor; or (iii) variables that characterize the confounding factor were measured but not included in the analysis.

### Domain 1, Variant A (only baseline confounding needs to be addressed – if N to C2, or Y to C2 and N to C3)

Signalling questions	Elaboration	Response
<b>1.1 Did the authors control for all the important confounding factors for which this was necessary?</b>	<p>The important confounding factors are those specified in the <i>Preliminary consideration of confounding factors</i>. The preliminary assessment will have determined whether there were important confounding factors that were not controlled for and should have been (because there was no evidence that controlling for the variable was unnecessary). Failure to control for all important confounding factors may lead to bias. The analysis should attempt to control for these confounding factors using an appropriate method, for example using stratification, regression, matching, standardization or inverse probability weighting (control may be for individual variables or for estimated propensity scores).</p> <p>Answer '<u>Y</u>' or '<u>PY</u>' if all the important confounding factors for which it was deemed necessary to control (under <i>Preliminary consideration of confounding factors</i>) were indeed controlled for appropriately. Also answer 'Y' or 'PY' in the (very rare) situation that there are no confounding factors and an unadjusted analysis is presented.</p>	<u>Y</u> / <u>PY</u> / <u>WN</u> (no, but uncontrolled confounding was probably <u>not</u> substantial) / <u>SN</u> (no, and uncontrolled confounding was probably substantial) / <u>NI</u>



# OTHER BIAS EVAL OPTIONS

- RoB 2 (Risk of Bias – randomized trials)
- ROBINS-I (Risk Of Bias In Non-randomized Studies of Interventions)
- ROBINS-E (Risk Of Bias In Non-randomized Studies of Exposures)

## For each study result: preliminary considerations

### A. Specify the result being assessed for risk of bias

A1. Specify the numerical result being assessed

### B. Decide whether to proceed with a risk-of-bias assessment

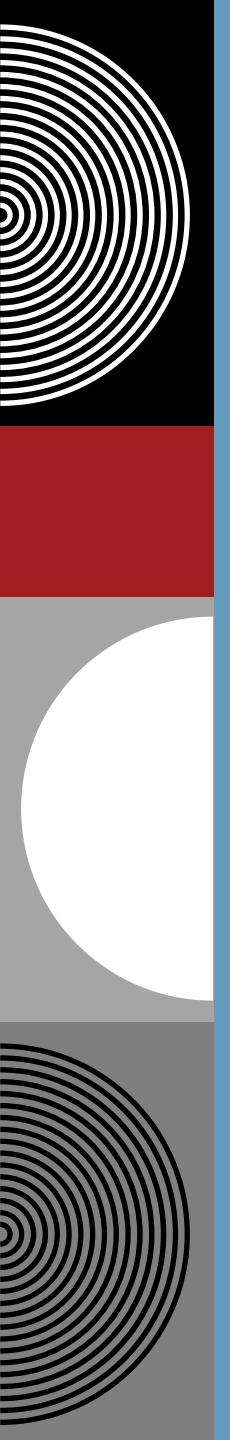
	Response options	Comments
B1. Did the authors make any attempt to control for confounding?	<a href="#">Y</a> / <a href="#">PY</a> / <a href="#">PN</a> / <a href="#">N</a>	
B2. If <a href="#">N/PN</a> to B1: Is there sufficient potential for confounding that an unadjusted result should not be considered further?	<a href="#">Y</a> / <a href="#">PY</a> / <a href="#">PN</a> / <a href="#">N</a>	
B3. Was the method of measuring exposure inappropriate?	<a href="#">Y</a> / <a href="#">PY</a> / <a href="#">PN</a> / <a href="#">N</a>	
B4. Was the method of measuring the outcome inappropriate?	<a href="#">Y</a> / <a href="#">PY</a> / <a href="#">PN</a> / <a href="#">N</a>	

If the answer to any of B2, B3 or B4 is 'Yes' or 'Probably yes', the result should be considered to be at very high risk of bias and no further assessment is required. Otherwise, proceed to section C.

### C. Specify the analysis in the current study for which results are being assessed for risk of bias

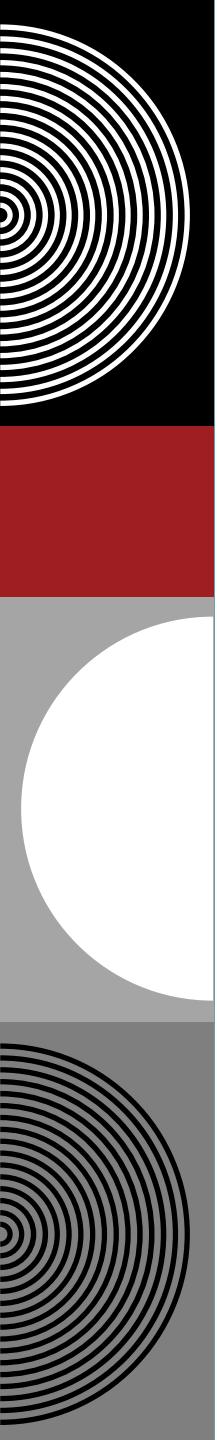
C1. Specify the outcome to which this result relates.

C2. Specify the participant group on which this result was based.



# OTHER BIAS EVAL OPTIONS

- RoB 2 (Risk of Bias – randomized trials)
- ROBINS-I (Risk Of Bias In Non-randomized Studies of Interventions)
- ROBINS-E (Risk Of Bias In Non-randomized Studies of Exposures)
- Newcastle-Ottawa Quality Assessment Scales (Observational studies)



## NEWCASTLE - OTTAWA QUALITY ASSESSMENT SCALE COHORT STUDIES

Note: A study can be awarded a maximum of one star for each numbered item within the Selection and Outcome categories. A maximum of two stars can be given for Comparability

### Selection

1) Representativeness of the exposed cohort

- a) truly representative of the average \_\_\_\_\_ (describe) in the community \*
- b) somewhat representative of the average \_\_\_\_\_ in the community \*
- c) selected group of users eg nurses, volunteers
- d) no description of the derivation of the cohort

2) Selection of the non exposed cohort

- a) drawn from the same community as the exposed cohort \*
- b) drawn from a different source
- c) no description of the derivation of the non exposed cohort

3) Ascertainment of exposure

- a) secure record (eg surgical records) \*
- b) structured interview \*
- c) written self report
- d) no description

4) Demonstration that outcome of interest was not present at start of study

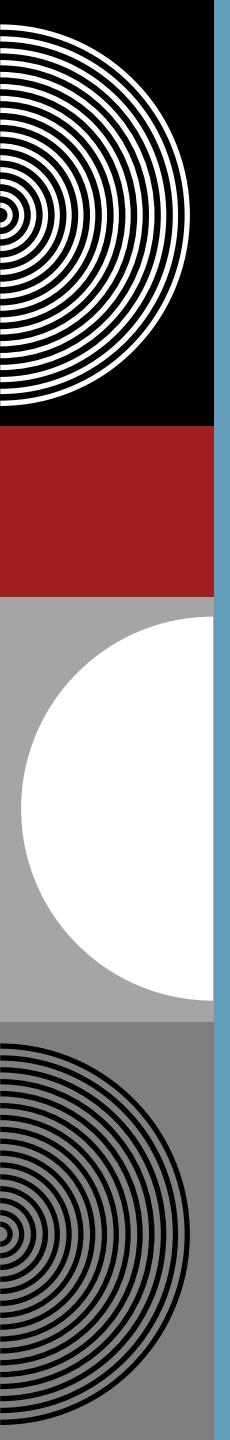
- a) yes \*
- b) no

<b>7-9 *</b> = <b>High quality</b>
<b>4-6 *</b> = <b>Moderate quality</b>
<b>0-3 *</b> = <b>Poor quality</b>

# OTHER BIAS EVAL OPTIONS

- RoB 2 (Risk of Bias – randomized trials)
- ROBINS-I (Risk Of Bias In Non-randomized Studies of Interventions)
- ROBINS-E (Risk Of Bias In Non-randomized Studies of Exposures)
- Newcastle-Ottawa Quality Assessment Scales (Observational studies)
- PROBAST (Prediction models)

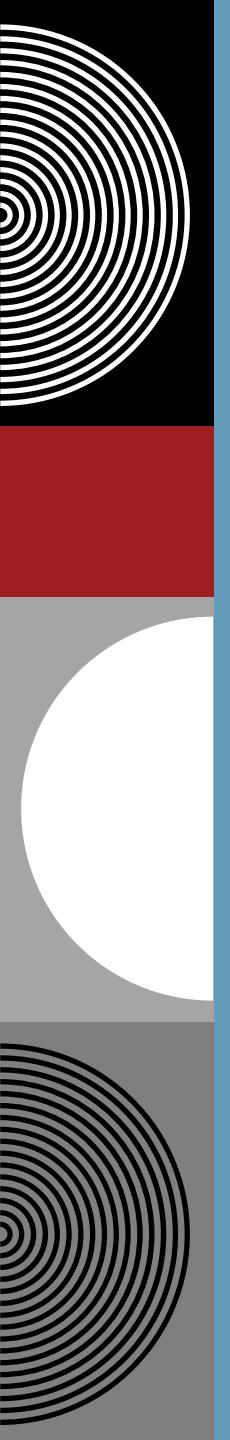
N40 ✓ : ✗ ✓  $f_x$  ✓



# OTHER BIAS EVAL OPTIONS

- RoB 2 (Risk of Bias – randomized trials)
- ROBINS-I (Risk Of Bias In Non-randomized Studies of Interventions)
- ROBINS-E (Risk Of Bias In Non-randomized Studies of Exposures)
- Newcastle-Ottawa Quality Assessment Scales (Observational studies)
- PROBAST (Prediction models)
- QUIPS (Quality In Prognosis Studies)

Author and year of publication				
Study identifier Reviewer				
Biases	Issues to consider for judging overall rating of "Risk of bias"	Study Methods & Comments	Rating of reporting	Rating of "Risk of bias"
Instructions to assess the risk of each potential bias:	These issues will guide your thinking and judgment about the overall risk of bias within each of the 6 domains. Some 'issues' may not be relevant to the specific study or the review research question. These issues are taken together to inform the overall judgment of potential bias for each of the 6 domains.	Provide comments or text excerpts in the white boxes below, as necessary, to facilitate the consensus process that will follow.	Click on each of the blue cells and choose from the drop down menu to rate the adequacy of reporting as yes, partial, no or unsure.	Click on the green cells; choose from the drop-down menu to rate potential risk of bias for each of the 6 domains as High, Moderate, or Low considering all relevant issues
<b>1. Study Participation</b>	<b>Goal:</b> To judge the risk of selection bias (likelihood that relationship between PF and outcome is different for participants and eligible non-participants).			
Source of target population	The source population or population of interest is adequately described for key characteristics (LIST).			
Method used to identify population	The sampling frame and recruitment are adequately described, including methods to identify the sample sufficient to limit potential bias (number and type used, e.g., referral patterns in health care)			
Recruitment period	Period of recruitment is adequately described			
Place of recruitment	Place of recruitment (setting and geographic location) are adequately described			
Inclusion and exclusion criteria	Inclusion and exclusion criteria are adequately described (e.g., including explicit diagnostic criteria or "zero time" description).			
Adequate study participation	There is adequate participation in the study by eligible individuals			
Baseline characteristics	The baseline study sample (i.e., individuals entering the study) is adequately described for key characteristics (LIST).			
Summary Study participation	The study sample represents the population of interest on key characteristics, sufficient to limit potential bias of the observed relationship between PF and outcome.			
<b>2. Study Attrition</b>	<b>Goal:</b> To judge the risk of attrition bias (likelihood that relationship between PF and outcome are different for completing and non-completing participants).			
Proportion of baseline sample available for analysis	Response rate (i.e., proportion of study sample completing the study and providing outcome data) is adequate.			
Attempts to collect information on participants who dropped out	Attempts to collect information on participants who dropped out of the study are described.			
Reasons and potential impact of subjects lost to follow-up	Reasons for loss to follow-up are provided.			
Outcome and prognostic factor information on those lost to follow-up	Participants lost to follow-up are adequately described for key characteristics (LIST). There are no important differences between key characteristics (LIST) and outcomes in participants who completed the study and those who did not.			
Study Attrition Summary	Loss to follow-up (from baseline sample to study population analyzed) is not associated with key characteristics (i.e., the study data adequately represent the sample) sufficient to limit potential bias to the observed relationship between PF and outcome.			



# OTHER BIAS EVAL OPTIONS

- RoB 2 (Risk of Bias – randomized trials)
- ROBINS-I (Risk Of Bias In Non-randomized Studies of Interventions)
- ROBINS-E (Risk Of Bias In Non-randomized Studies of Exposures)
- Newcastle-Ottawa Quality Assessment Scales (Observational studies)
- PROBAST (Prediction models)
- QUIPS (Quality In Prognosis Studies)
- CASP checklist for qualitative studies (and other CASP checklists)

## Section A Are the results valid?

1. Was there a clear statement of the aims of the research?  Yes  No  Can't Tell

**APPRAISAL SUMMARY:** *List key points from your critical appraisal that need to be considered when assessing the validity of the results and their usefulness in decision-making.*

Positive/Methodologically sound	Negative/Relatively poor methodology	Unknowns
<p>CO</p> <ul style="list-style-type: none"><li>•</li><li>•</li><li>•</li></ul> <p>2.</p>		

### CONSIDER:

- *If the research seeks to interpret or illuminate the actions and/or subjective experiences of research participants*
- *Is qualitative research the right methodology for addressing the research goal?*

3. Was the research design appropriate to  Yes  No  Can't Tell

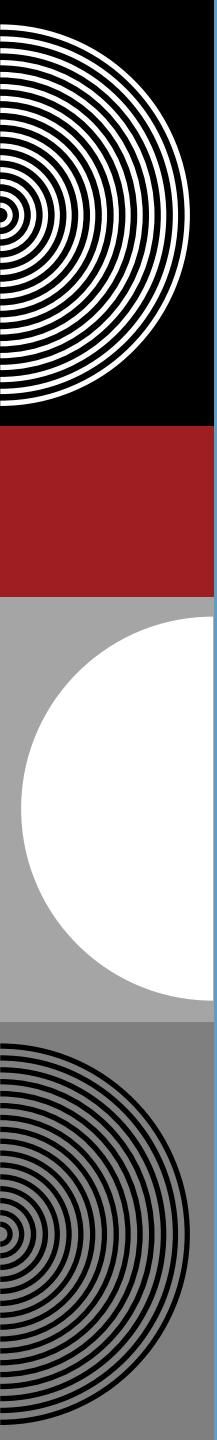


We offer a number of **free downloadable checklists** to help you more easily and accurately perform critical appraisal across a number of different study types.

The CASP checklists are easy to understand but in case you need any further guidance on how they are structured, take a look at our [guide on how to use our CASP checklists](#).

- > [Systematic Reviews with Meta-Analysis of Observational Studies](#)
- > [Systematic Reviews with Meta-Analysis of Randomised Controlled Trials \(RCTs\)](#)
- > [Randomised Controlled Trial \(RCT\) Checklist](#)
- > [Systematic Review Checklist](#)
- > [Qualitative Studies Checklist](#)
- > [Cohort Study Checklist](#)
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- > [Case Control Study Checklist](#)
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# OTHER BIAS EVAL OPTIONS

- RoB 2 (Risk of Bias – randomized trials)
- ROBINS-I (Risk Of Bias In Non-randomized Studies of Interventions)
- ROBINS-E (Risk Of Bias In Non-randomized Studies of Exposures)
- Newcastle-Ottawa Quality Assessment Scales (Observational studies)
- PROBAST (Prediction models)
- QUIPS (Quality In Prognosis Studies)
- CASP checklist for qualitative studies
- JBI Critical Appraisal Tools

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### Case Control Studies

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## Economic Evaluations



## Prevalence Studies



### Checklist for Prevalence Studies

#### How to cite



Munn Z, Moola S, Lisy K, Riitano D, Tufanaru C. Chapter 5: Systematic reviews of prevalence and incidence. In: Aromataris E, Munn Z (Editors). JBI Manual for Evidence Synthesis. JBI, 2020

#### Associated publication(s)



JBI Manual for Evidence Synthesis  
External Methodological Guidance

Qualitative Research



# JBI CRITICAL APPRAISAL CHECKLIST FOR STUDIES REPORTING PREVALENCE DATA

Reviewer \_\_\_\_\_ Date \_\_\_\_\_

Author \_\_\_\_\_ Year \_\_\_\_\_ Record Number \_\_\_\_\_

Overall appraisal:    Include        Exclude        Seek further info   

Comments (Including reason for exclusion)

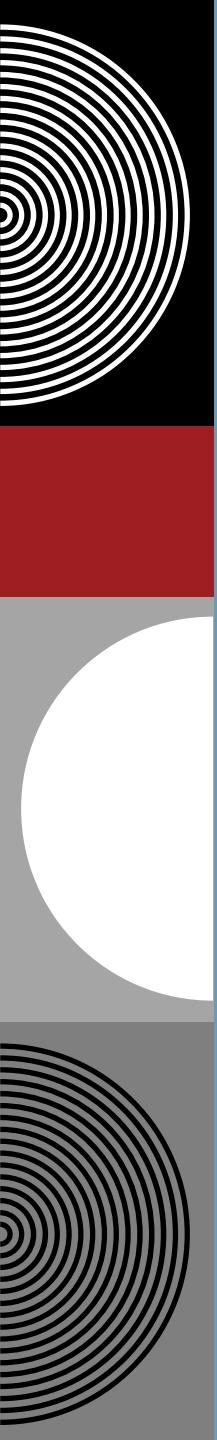
\_\_\_\_\_

\_\_\_\_\_

2. Were study participants sampled in an appropriate way?               

3. Was the sample size adequate?               

4. Were the study subjects and the setting described in detail?



# ANY QUESTIONS?

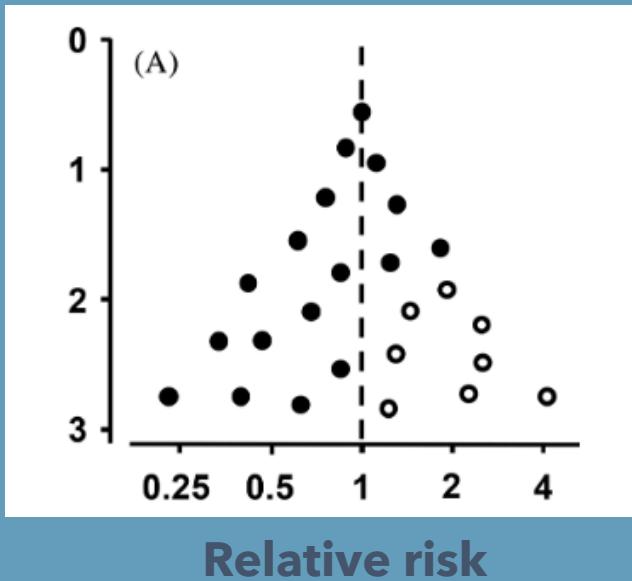
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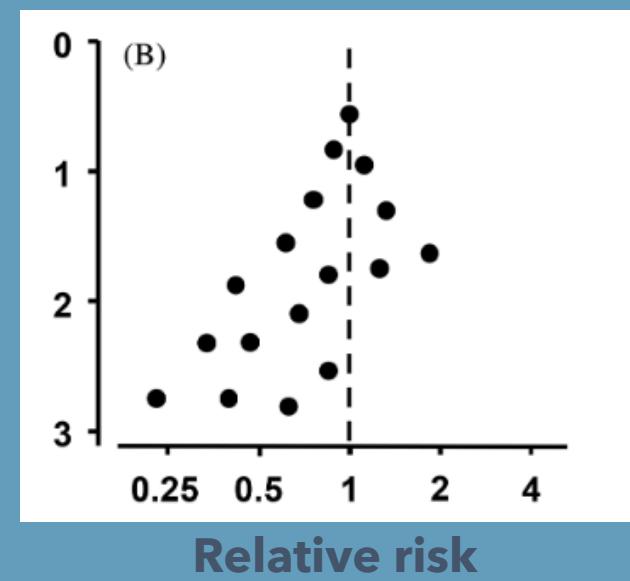
?

# EVALUATING PUBLICATION BIAS

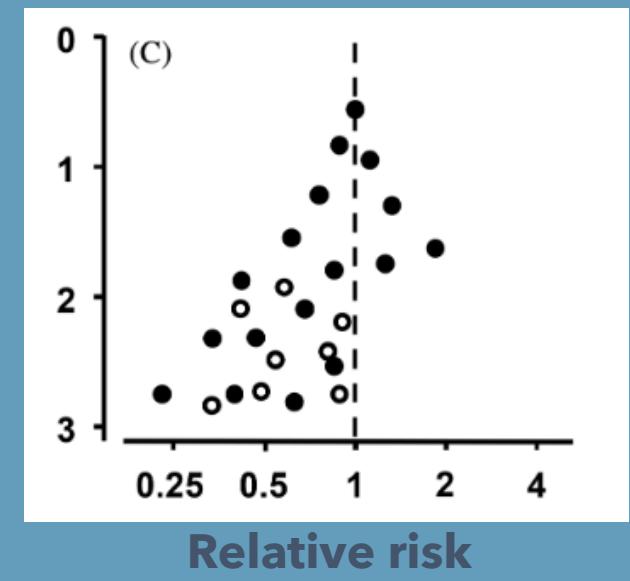
Standard error



Symmetrical plot in the absence of reporting bias (open circles indicate smaller studies showing no statistically significant results)



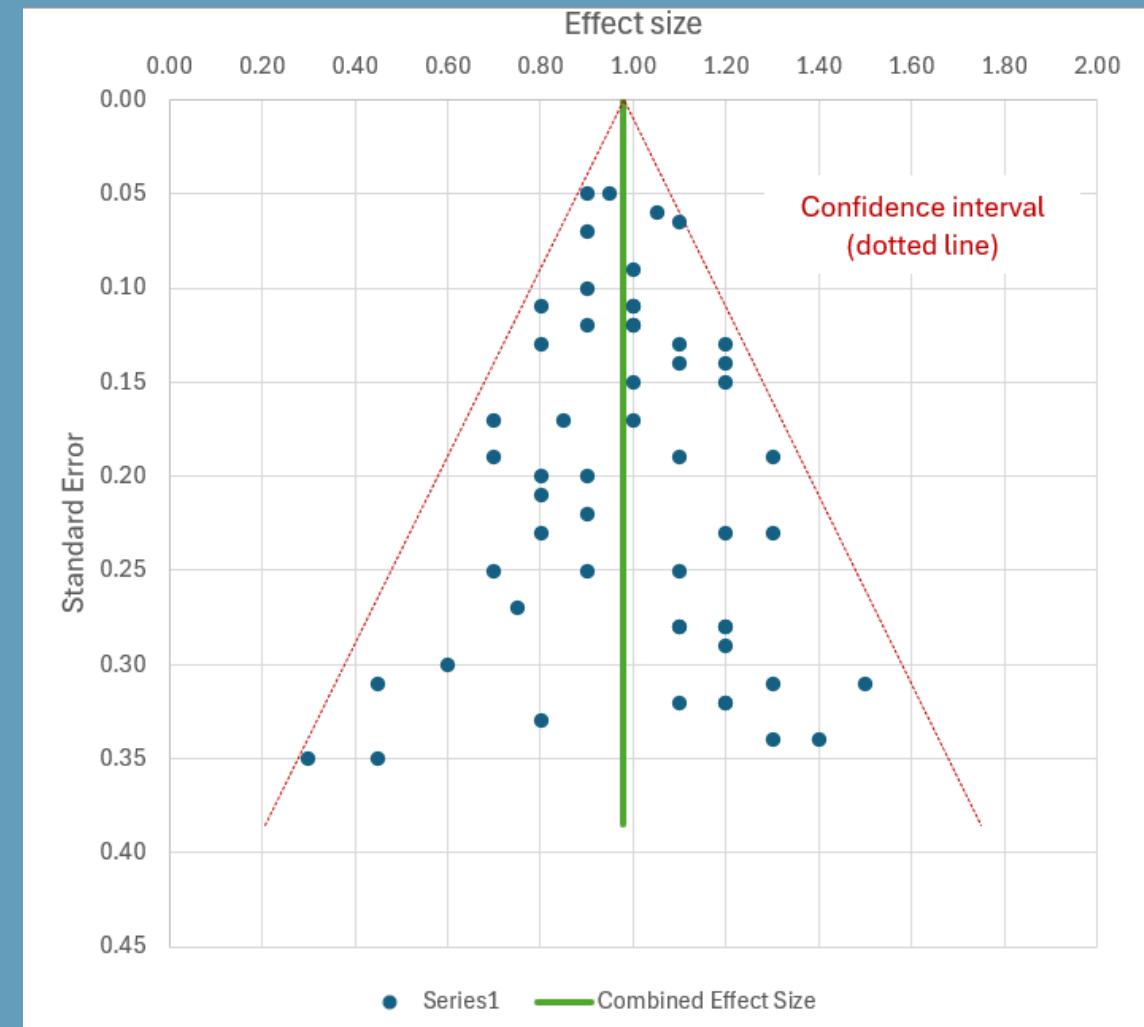
Asymmetrical plot in the presence of reporting bias (smaller studies showing no statistically significant results are missing)

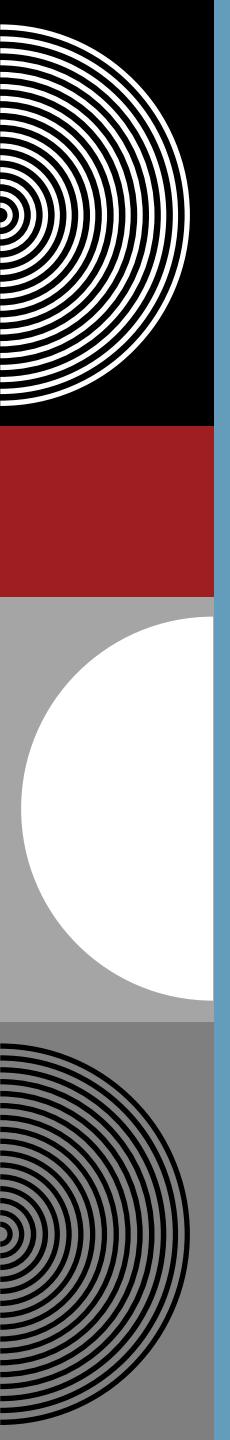


Asymmetrical plot in the presence of bias due to methodologically flawed smaller studies (open circles indicate small studies using few methodological safeguards, whose results are biased toward larger effects)

# HOW TO CREATE A FUNNEL PLOT IN EXCEL

- There are many ways to make a funnel plot (R, Stata, etc.) but you can also do it in Excel!
- For this class we have created an Excel template that will work for meta-analyses with **fixed effects and absolute measures**.
- Once you input study effect sizes and standard errors, you will get a plot like this:





# EGGER REGRESSION

- Egger's test is a linear regression that analyzes publication bias
- The test performs a regression of effect size estimates on their standard errors, weighted by their inverse variance
- A p-value of  $p<0.05$  on the intercept suggests publication bias (i.e. that the funnel plot is asymmetrical)
- **This is not perfect, just one imperfect tool (like all statistical models)**

# EXAMPLES AND PRACTICE

In the [Simple funnel plot examples](#) Excel file on the course website, you will find 3 examples of different hypothetical studies included in fake meta-analyses.

Take some time to review the different examples with a partner, pondering these questions for each, and then we'll discuss.

## 1. Visual Assessment

Is the funnel plot roughly symmetrical/assymetrical?

Do you notice any gaps or crowded areas? If yes, what might explain these?

## 2. Egger Regression

What was the p-value of your Egger Regression? (Hint, did it turn red or blue?)

Are you worried about publication bias as a result of this?

## 3. Reflection

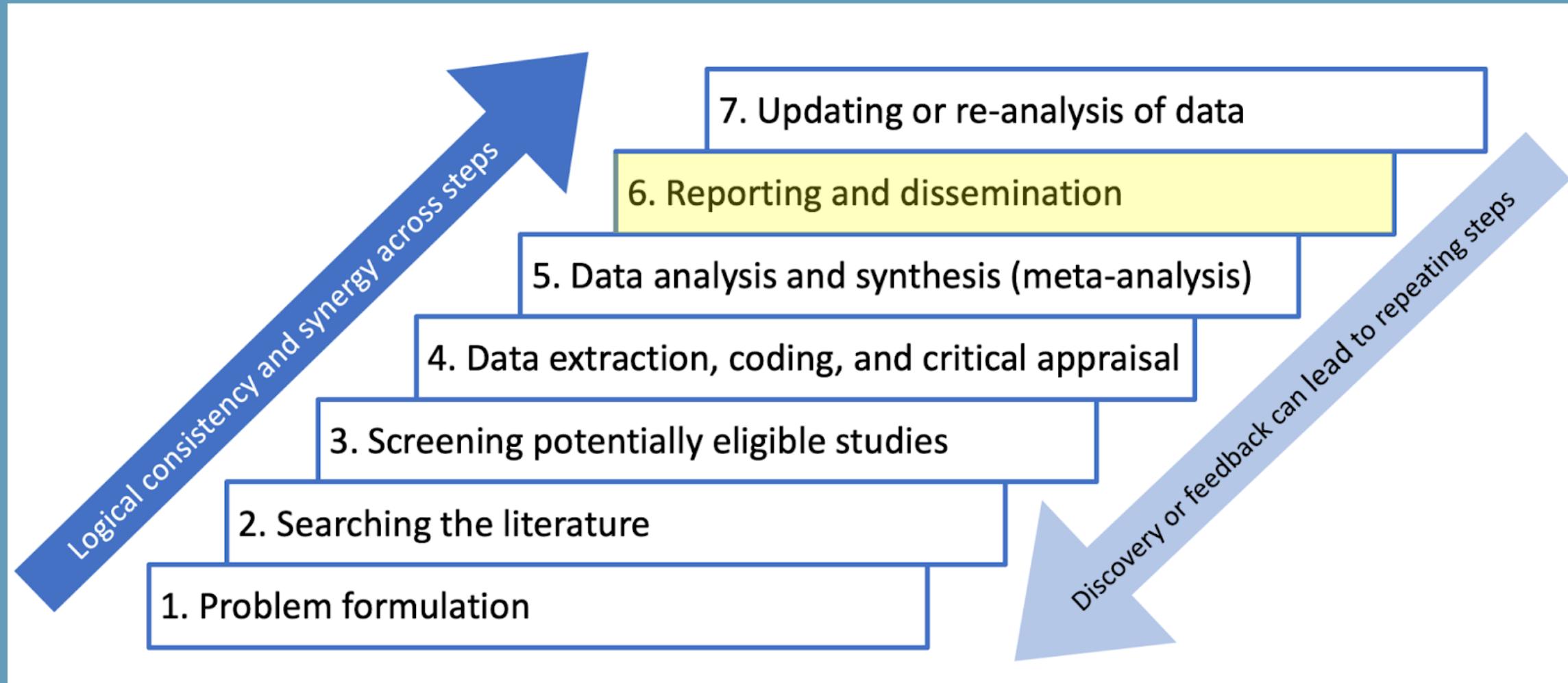
What factors besides might influence the way that your funnel plot or Egger Regression results turned out?

# POOLING EFFECT MEASURES

Also added to the Tutorials and tips section of the course website.

<https://www.youtube.com/watch?v=4qmrPZgt2BI>

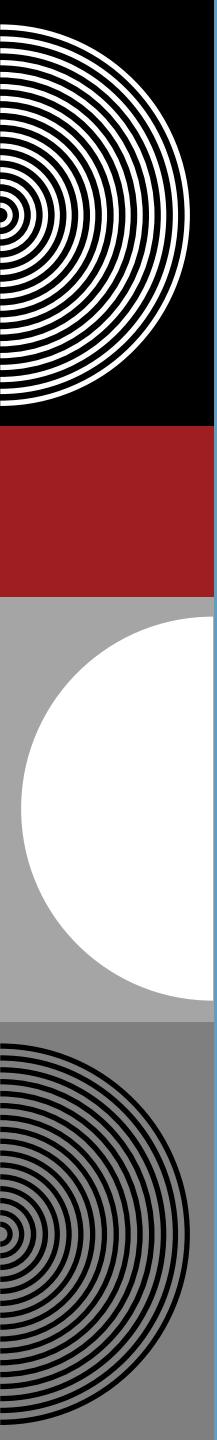
# SYSTEMATIC REVIEWS PROCESS



# PUBLISHING YOUR REVIEW

- Finding a journal
- Preparing a manuscript for submission
- PRISMA checklist preparation
- Submitting and resubmitting

# FINDING A JOURNAL



# FINDING A JOURNAL

## **How do you know what journal is best?**

- Check PubMed to see what journals have published similar content (systematic reviews on something related, or multiple articles on your topic of interest)
- Look up the journal aims and scope
- Look to make sure they have systematic reviews as an article type, and that their requirements will work for you
  - How many tables/figures
  - Word count
  - Other things?



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The journal invites manuscripts that deal with the following topics (the main themes/topics covered by this journal and sample papers can also be found [here](#)):

- novel digital health approaches, methods, and devices
- large digital medicine / digital therapeutics trials with clinical impact
- data science, open data
- studies evaluating the impact of Internet/social media use or specific eHealth/mHealth interventions on individual health-related or social outcomes
- evaluations and implementations of innovative mhealth (mobile health) applications, social media apps, ubiquitous computing, or innovative and emerging technologies in health
- descriptions of the design and impact of Internet and mobile applications and websites or social media for consumers/ patients or medical professionals
- use of the Internet, social media and mhealth in the context of clinical information and communication, including telemedicine
- use of the Internet, social media, and mhealth in medical research and the basic sciences such as molecular biology or chemistry (e.g. bioinformatics, online factual databases)
- medical information management and librarian sciences
- e-learning and knowledge translation, online-courses, social media, web-based and mobile programs for undergraduate and continuing education,
- eHealth/mHealth and social media applications for public health and population health technology (disease monitoring, teleprevention, teleepidemiology)
- evidence-based medicine and the Internet and mhealth (e.g. online development or dissemination of clinical guidelines, measuring agreement about management of a given clinical problem among physicians, etc.)
- the impact of eHealth/mHealth/pHealth/iHealth, social media, the Internet, or health care technologies on public health, the health care system and policy
- methodological aspects of doing Internet/mhealth/social media research, e.g. methodology of web-based surveys
- design and validation of novel web-based instruments
- ecological momentary assessment, sensors, mobile technologies for gathering and analyzing data in real-time
- analysis of e-communities, social media communities, or virtual social networks
- comparisons of effectiveness of health communication and information on the Internet/mHealth/social media compared with other methods of health communication,
- effects of the Internet/mhealth/social media and information/communication technology on the patient-physician relationship



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# What are the article types for JMIR Publications journals?



Editorial Director

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Virtually all JMIR journals publish Original Papers, Research Letters, Tutorials, Viewpoints, Commentaries, Editorials, Reviews, and [Corrigenda and Addenda](#). Special article types only accepted by specific JMIR Publications journals are specified below.

## Article Types

Author Instructions applicable for each article type are provided below.

Authors can access a full-length submission preparation checklist here: [Submitting Your Manuscript to JMIR Publications: A Guide for Authors](#). The submission preparation checklist is primarily applicable to article types (below) that contain original research data.

See also [Additional Author Instructions Resources](#).

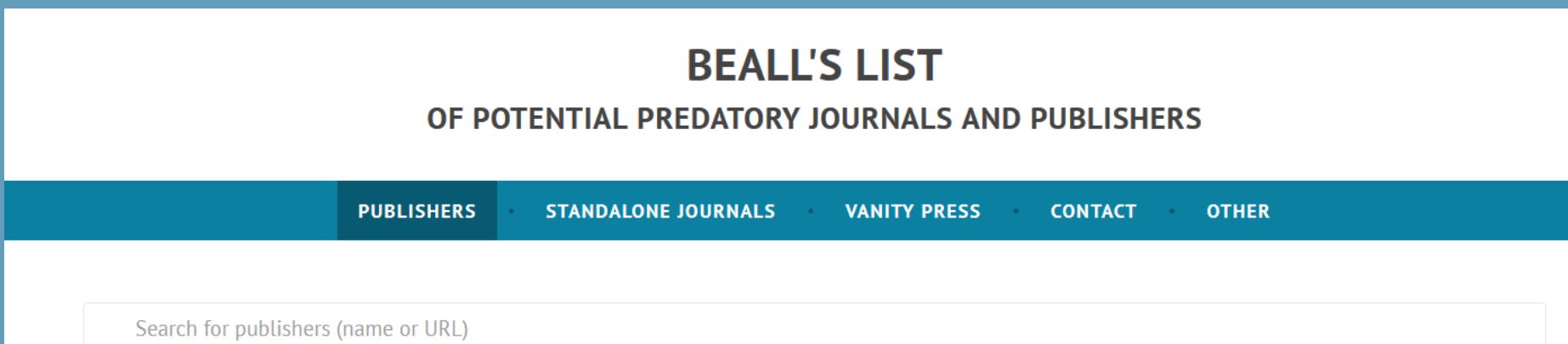
- [Original Paper](#)
- [Review](#)
- [Research Letter](#)
- [Viewpoint](#)
- [Tutorial](#)
- [Implementation Report](#)
- [Case Report](#)

# BEWARE OF PREDATORY JOURNALS!

- Predatory journals care about the money you will pay them to publish your work, not about sharing good science!
- Publishing in this journals can damage your reputation and undermine your scientific contribution
- Once you submit it can be hard to withdraw your submission
- **Check before you submit!**

# BEWARE OF PREDATORY JOURNALS!

<https://beallslist.net/>



The screenshot shows the homepage of Beall's List. The header features the title 'BEALL'S LIST' in large, bold, black capital letters, with 'OF POTENTIAL PREDATORY JOURNALS AND PUBLISHERS' in a smaller, bold, black font below it. A navigation bar below the header includes links for 'PUBLISHERS', 'STANDALONE JOURNALS', 'VANITY PRESS', 'CONTACT', and 'OTHER'. A search bar is located in the center of the page, with the placeholder text 'Search for publishers (name or URL)'. The main content area is titled 'Potential predatory scholarly open-access publishers' and contains instructions for using the search function. It also includes a note that 'All journals published by a predatory publisher are potentially predatory unless stated otherwise.' A 'GO TO UPDATE' button is visible in the bottom right corner of this section.

## Potential predatory scholarly open-access publishers

**Instructions:** first, find the journal's publisher – it is usually written at the bottom of the journal's webpage or in the “About” section. Then simply enter the publisher's name or its URL in the search box above. If the journal does not have a publisher use the [Standalone Journals](#) list.

**All journals published by a predatory publisher are potentially predatory unless stated otherwise.**

## Original list

[GO TO UPDATE](#)

This is an archived version of the Beall's list – a list of potential predatory publishers created by a librarian [Jeffrey Beall](#). We will only update links and add notes to this list.

- 1088 Email Press
- 2425 Publishers
- The 5th Publisher
- ABC Journals
- A M Publishers

## Useful pages

[List of journals falsely claiming to be indexed by DOAJ](#)

[DOAJ: Journals added and removed](#)

[Nonrecommended medical periodicals](#)

[Retraction Watch](#)

[Flaky Academic Journals Blog](#)

[List of scholarly publishing stings](#)

## Conferences

[Questionable conferences \[archive\]](#)

[How to avoid predatory conferences](#)



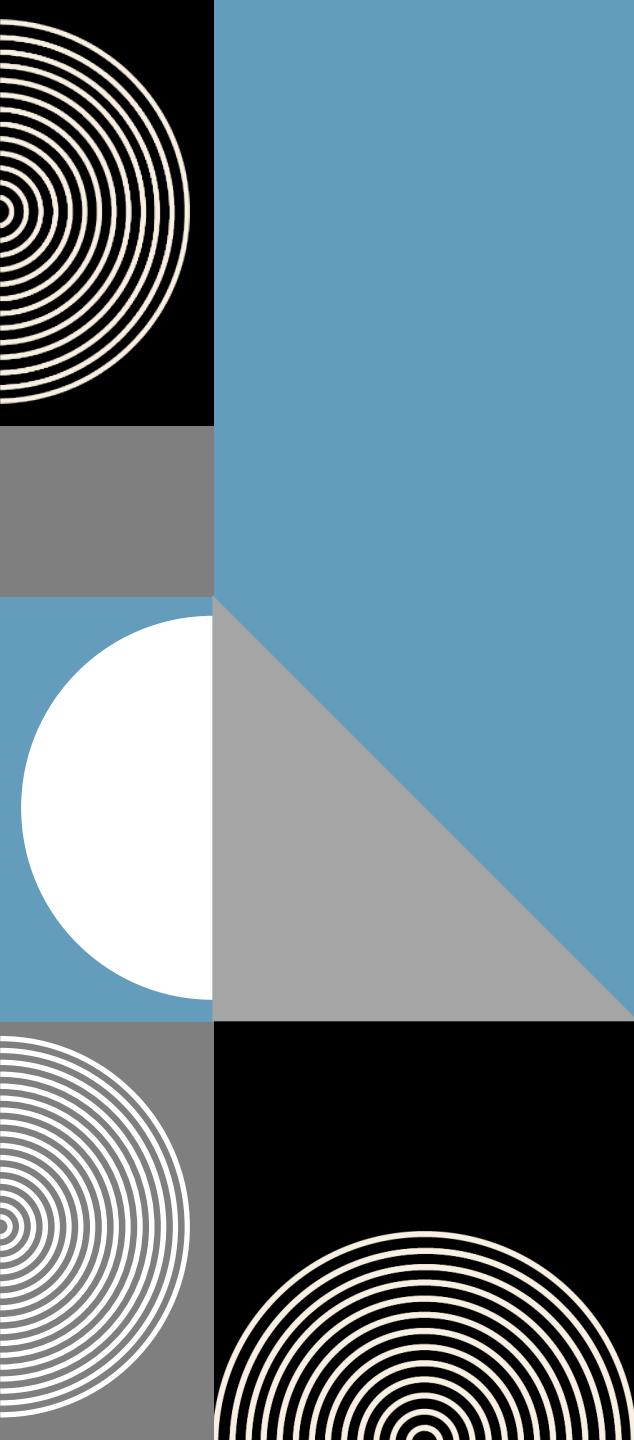
# **PREPARING A MANUSCRIPT FOR SUCCESSFUL SUBMISSION**

# CHECK ALL THE DETAILS!



**Information for Authors will tell you everything you need to know (usually)!**

- Whether double-blind review or not
  - *You can redact information you will fix later*
- Whether title page, abstract, figures, and/or tables should be with the manuscript text or in a separate file
- What goes on the title page
- Format of author names and affiliations
- Abstract structure and word count
- Manuscript word count and structure of headings
- Where funding and conflicts/disclosure information goes
- Format of tables (e.g. no horizontal lines, whether to include p-values)
- Format for citations and references



# PREPARING YOUR PRISMA CHECKLIST

# PRISMA GUIDELINES

## ***Overview***

<https://www.prisma-statement.org/>

## ***Checklist***

<https://www.prisma-statement.org/prisma-2020-checklist>

or

<https://prisma.shinyapps.io/checklist/>

## ***Figure 1 Template***

<https://www.prisma-statement.org/prisma-2020-flow-diagram>

or

<https://facenteconsulting.com/wp-content/uploads/PRISMA-Flow-Diagram-Template.pptx>



## PRISMA 2020 Checklist

Section and Topic	Item #	Checklist item	Location where item is reported
<b>TITLE</b>			
Title	1	Identify the report as a systematic review.	
<b>ABSTRACT</b>			
Abstract	2	See the PRISMA 2020 for Abstracts checklist.	
<b>INTRODUCTION</b>			
Rationale	3	Describe the rationale for the review in the context of existing knowledge.	
Objectives	4	Provide an explicit statement of the objective(s) or question(s) the review addresses.	

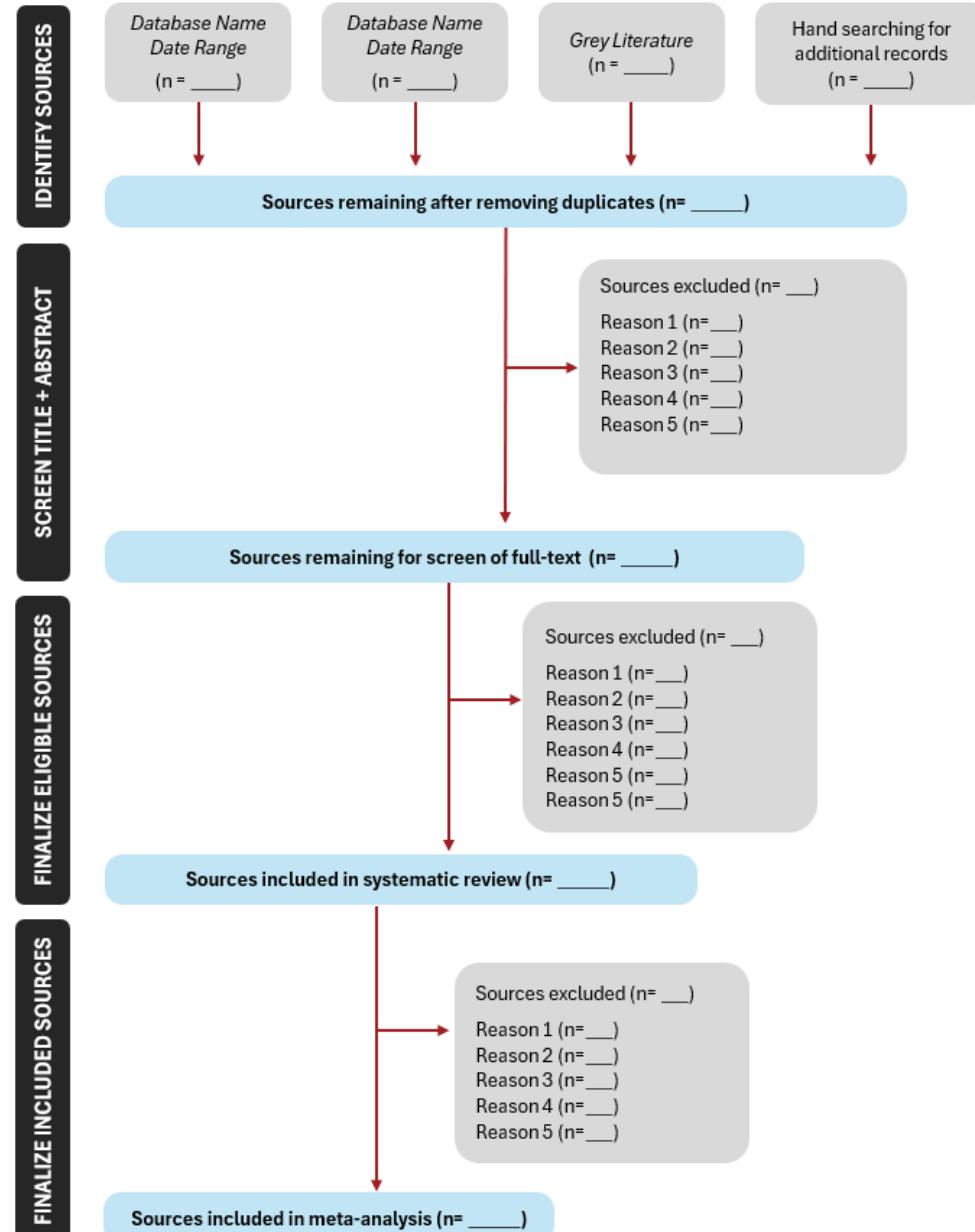
METHODS		
Eligibility criteria	5	Specify the inclusion and exclusion criteria for the review and how studies were grouped for the syntheses.
Information sources	6	Specify all databases, registers, websites, organisations, reference lists and other sources searched or consulted to identify studies. Specify the date when each source was last searched or consulted.
Search strategy	7	Present the full search strategies for all databases, registers and websites, including any filters and limits used.
Selection process	8	Specify the methods used to decide whether a study met the inclusion criteria of the review, including how many reviewers screened each record and each report retrieved, whether they worked independently, and if applicable, details of automation tools used in the process.
Data collection process	9	Specify the methods used to collect data from reports, including how many reviewers collected data from each report, whether they worked independently, any processes for obtaining or confirming data from study investigators, and if applicable, details of automation tools used in the process.
Data items	10a	List and define all outcomes for which data were sought. Specify whether all results that were compatible with each outcome domain in each study were sought (e.g. for all measures, time points, analyses), and if not, the methods used to decide which results to collect.
	10b	List and define all other variables for which data were sought (e.g. participant and intervention characteristics, funding sources). Describe any assumptions made about any missing or unclear information.
Study risk of bias assessment	11	Specify the methods used to assess risk of bias in the included studies, including details of the tool(s) used, how many reviewers assessed each study and whether they worked independently, and if applicable, details of automation tools used in the process.
Effect measures	12	Specify for each outcome the effect measure(s) (e.g. risk ratio, mean difference) used in the synthesis or presentation of results.
Synthesis methods	13a	Describe the processes used to decide which studies were eligible for each synthesis (e.g. tabulating the study intervention characteristics and comparing against the planned groups for each synthesis (item #5)).
	13b	Describe any methods required to prepare the data for presentation or synthesis, such as handling of missing summary statistics, or data conversions.
	13c	Describe any methods used to tabulate or visually display results of individual studies and syntheses.
	13d	Describe any methods used to synthesize results and provide a rationale for the choice(s). If meta-analysis was performed, describe the model(s), method(s) to identify the presence and extent of statistical heterogeneity, and software package(s) used.
	13e	Describe any methods used to explore possible causes of heterogeneity among study results (e.g. subgroup analysis, meta-regression).
	13f	Describe any sensitivity analyses conducted to assess robustness of the synthesized results.
Reporting bias assessment	14	Describe any methods used to assess risk of bias due to missing results in a synthesis (arising from reporting biases).
Certainty assessment	15	Describe any methods used to assess certainty (or confidence) in the body of evidence for an outcome.

RESULTS		
Study selection	16a	Describe the results of the search and selection process, from the number of records identified in the search to the number of studies included in the review, ideally using a flow diagram.
	16b	Cite studies that might appear to meet the inclusion criteria, but which were excluded, and explain why they were excluded.
Study characteristics	17	Cite each included study and present its characteristics.
Risk of bias in studies	18	Present assessments of risk of bias for each included study.
Results of individual studies	19	For all outcomes, present, for each study: (a) summary statistics for each group (where appropriate) and (b) an effect <u>estimate</u> and its precision (e.g. confidence/credible interval), ideally using structured tables or plots.
Results of syntheses	20a	For each synthesis, briefly summarise the characteristics and risk of bias among contributing studies.
	20b	Present results of all statistical syntheses conducted. If meta-analysis was done, present for each the summary estimate and its precision (e.g. confidence/credible interval) and measures of statistical heterogeneity. If comparing groups, describe the direction of the effect.
	20c	Present results of all investigations of possible causes of heterogeneity among study results.
	20d	Present results of all sensitivity analyses conducted to assess the robustness of the synthesized results.
Reporting biases	21	Present assessments of risk of bias due to missing results (arising from reporting biases) for each synthesis assessed.
Certainty of evidence	22	Present assessments of certainty (or confidence) in the body of evidence for each outcome assessed.

# FIGURE 1

Template is provided by PRISMA 2020  
<https://www.prisma-statement.org/prisma-2020-flow-diagram>  
(and a modified template is provided for this course, on the course website)

## SYSTEMATIC REVIEWS & META-ANALYSES PRISMA Flow Diagram Template



<b>DISCUSSION</b>		
Discussion	23a	Provide a general interpretation of the results in the context of other evidence.
	23b	Discuss any limitations of the evidence included in the review.
	23c	Discuss any limitations of the review processes used.
	23d	Discuss implications of the results for practice, policy, and future research.
<b>OTHER INFORMATION</b>		
Registration and protocol	24a	Provide registration information for the review, including register name and registration number, or state that the review was not registered.
	24b	Indicate where the review protocol can be accessed, or state that a protocol was not prepared.
	24c	Describe and explain any amendments to information provided at registration or in the protocol.
Support	25	Describe sources of financial or non-financial support for the review, and the role of the funders or sponsors in the review.
Competing interests	26	Declare any competing interests of review authors.
Availability of data, code and other materials	27	Report which of the following are publicly available and where they can be found: template data collection forms; data extracted from included studies; data used for all analyses; analytic code; any other materials used in the review.

## PRISMA 2020 Checklist

The PRISMA 2020 statement is intended to facilitate transparent reporting of systematic reviews (with or without meta-analysis). It has been designed primarily for systematic reviews of studies that evaluate the effects of health interventions, irrespective of the design of the included studies. However, the checklist items are applicable to reports of systematic reviews evaluating other non-health-related interventions (e.g. social or educational interventions), and many items are applicable to systematic reviews with objectives other than evaluating interventions (e.g. evaluating aetiology, prevalence or prognosis). PRISMA 2020 is intended for use in systematic reviews that include synthesis (e.g. pairwise meta-analysis, or other synthesis methods), or do not include synthesis (e.g. because only one eligible study is identified).

The PRISMA 2020 statement comprises a 27-item checklist addressing the introduction, methods, results and discussion sections of a systematic review report, and a 12-item checklist for the abstract. Once users record a response for each item in the checklist(s) below, they can generate and download a report of their completed checklist in Word or PDF format.

Complete with sample answers

#### About & Citation Info

Generate Report ▾

PRISMA 2020 MAIN CHECKLIST

PRISMA 2020 ABSTRACT CHECKLIST

## TITLE

**Title** 1 Identify the report as a systematic review

#### Location where item is reported

## ABSTRACT

**Abstract** 2 See the PRISMA 2020 for Abstracts checklist

## Go to PRISMA-A

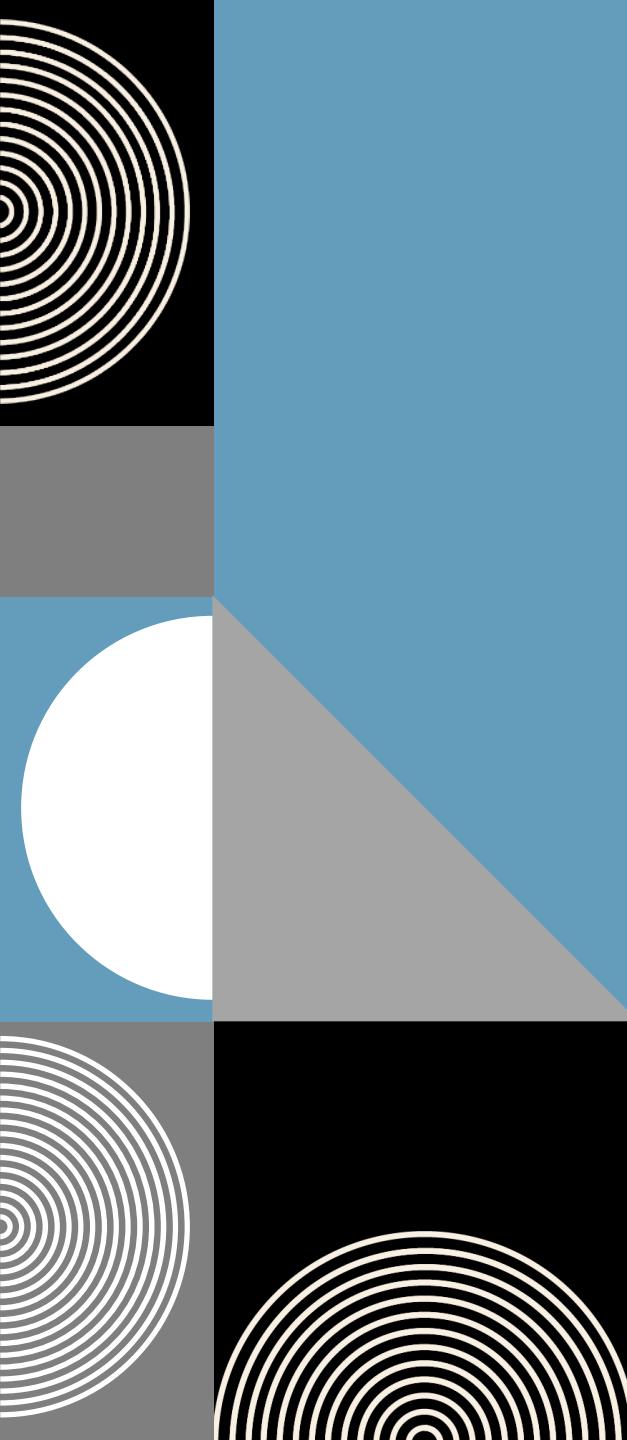
## INTRODUCTION

**Rationale** 3 Describe the rationale for the review in the context of existing knowledge.

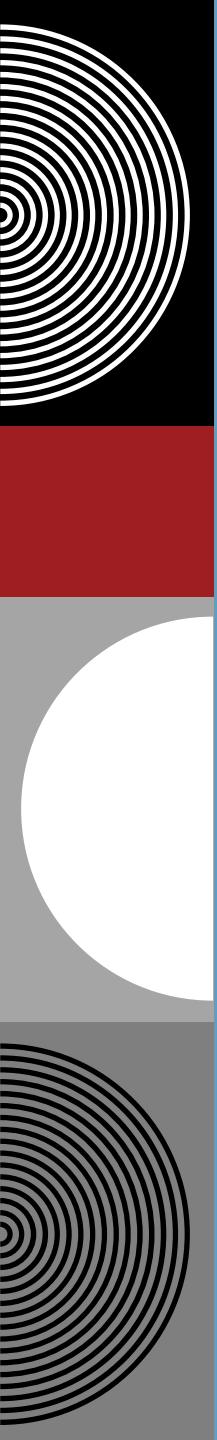
#### Location where item is reported

**Objectives** 4 Provide an explicit statement of the objective(s) or question(s) the review addresses

Location where item is reported



**SUBMITTING...  
AND RESUBMITTING**



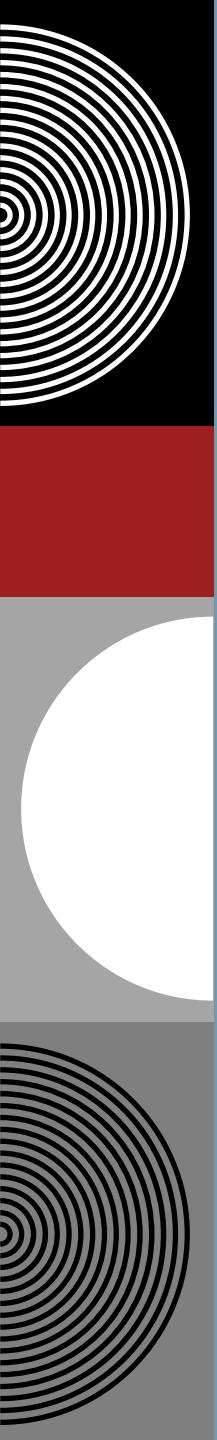
Submit, and wait...

And wait....and wait....and wait.....

A quick rejection just means to find a new journal!

(They didn't waste your time.)

A “Revise and Resubmit” is a good sign you’re likely to get accepted, so put the work in.



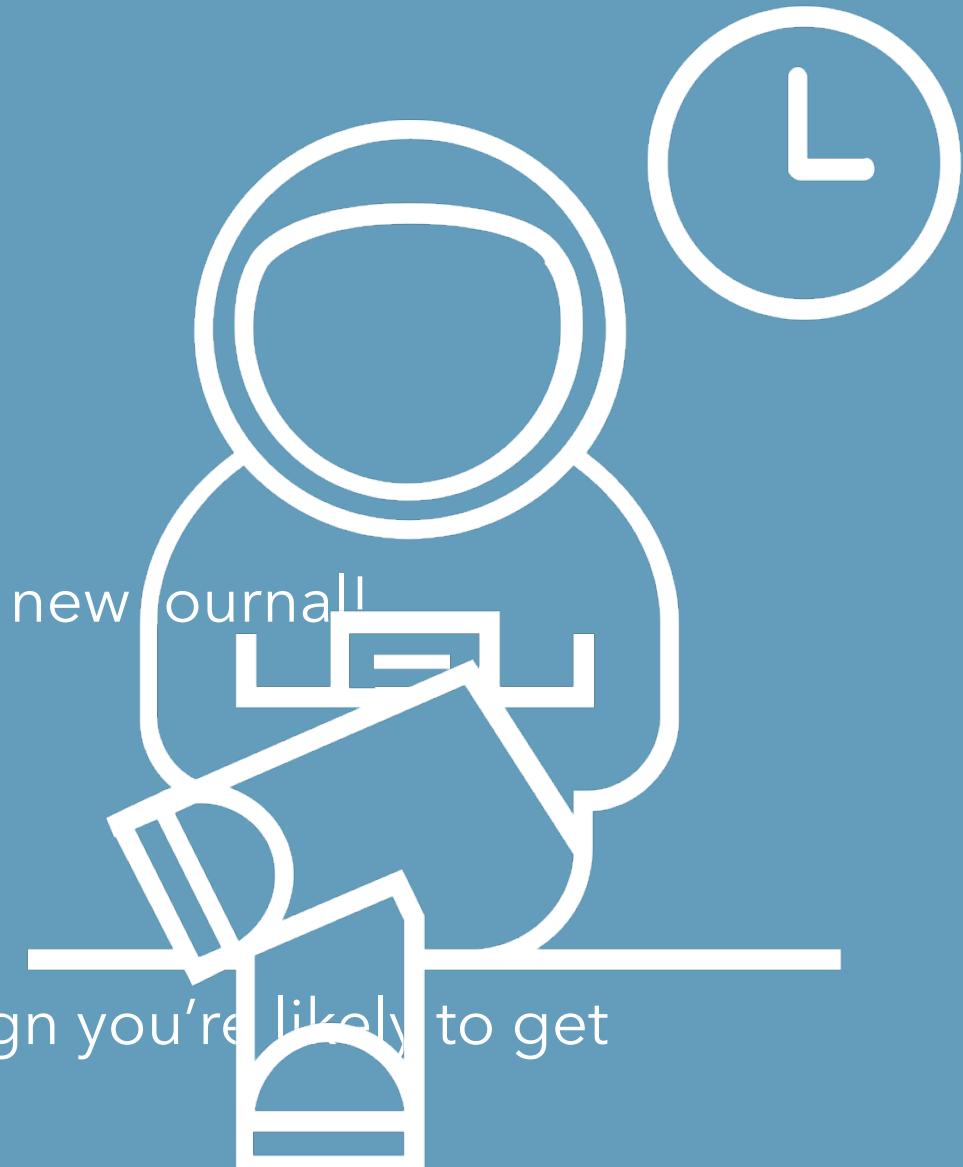
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And wait....and wait....and wait.....

A quick rejection just means to find a new journal!

(They didn't waste your time.)

A “Revise and Resubmit” is a good sign you’re likely to get accepted, so put the work in.



# RESPONSE TO REVIEWERS

**Reviewer #2:** Given that this review had no restriction on publication dates, and from their discussion and methods, they appear to have done an exhaustive review of the literature. What that demonstrates is that all the evidence that the review of literature has produced is 6 studies, of which only one shows significant effect. Thus, I am not comfortable with the final statement in their conclusion that 'smoking cessation programs in Appalachia are an effective tool to achieve abstinence' (Line 49). I feel that this conclusion is too strong, given the evidence they have provided. I would rather suggest that they say that there is insufficient evidence in the literature on the effect of smoking cessation interventions to the Appalachian community.

**Author response:** We agree with the reviewer and adapted the abstract accordingly. The following section in the abstract was deleted:

*"with a number needed to treat (NNT) of 9, indicating that smoking cessation programs in Appalachia are an effective tool to achieve abstinence."*

Instead, the following sentence was added:

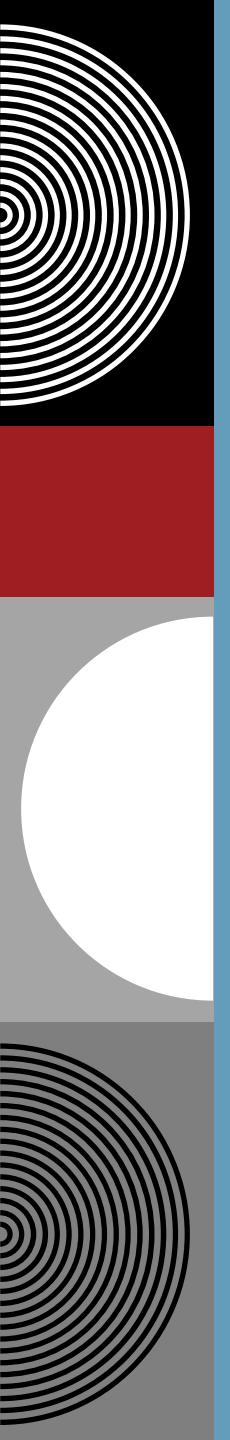
*"Given the low number of studies, their substantial heterogeneity and high risk of bias, the evidence of the effectiveness of smoking cessation interventions in Appalachia must be interpreted with caution."*

Our last sentence in the manuscript Conclusions section (lines 383-386) already discuss the importance of interpreting with caution.

**Reviewer #2:** This paper could be better strengthened if the authors speak to the need for more research on smoking cessation intervention to this population, specifically using the gaps identified in the literature to provide suggestions on designs for future controlled trials on smoking cessation interventions to communities in Appalachia.

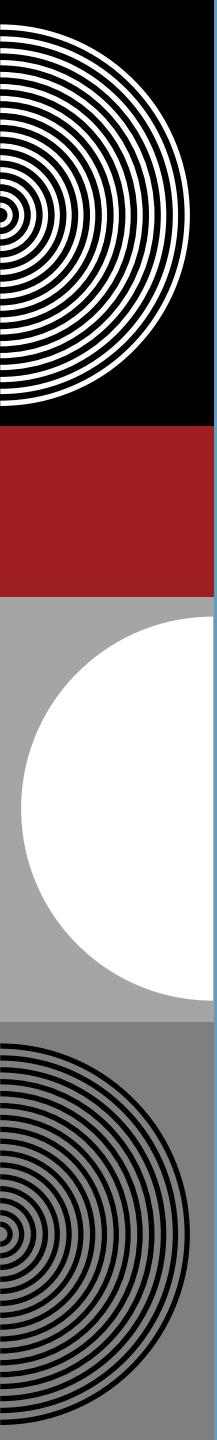
**Author response:** We thank the reviewer for this valuable suggestion and adapted the discussion section as follows:

*"These limitations highlight the need for more rigorous research to identify successful smoking cessation interventions for the Appalachian population. Notably, standardized definitions of*



# RESPONSE TO REVIEWERS

- Address every point reviewers raised
- Provide the details of what you changed right in the response letter
- Also upload both a clean version of the revised manuscript and one with all changes tracked
  - Don't track minor tweaks that are not directly in response to reviewer comments
- Be appreciative and complimentary
  - But not overly so
- Don't make changes that are unreasonable! Just politely explain why you are not.
  - "This is beyond the scope of the review" is also OK, within reason



# ANY QUESTIONS?

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